

## **EPA BASE Study Findings - Airborne Biological Contaminants:**

### **Mean Concentrations of Airborne Culturable Bacteria (CFU/m<sup>3</sup>)**

#### **Total Bacteria and Thermophilic Bacteria**

##### **Total bacteria (sum of mesophilic and thermophilic bacteria)**

<b>Sampling location</b>	<b>Bacterial group</b>	<b>Average</b>	<b>Std Dev</b>	<b>Maximum</b>	<b>Median</b>
<b>Indoors</b>	Gram+ rods	<b>11.0*</b>	10.7	67.1	7.8
	Gram+ cocci	<b>38.9**</b>	27.4	146.4	32.5
	Gram– rods	<b>3.0*</b>	5.2	38.0	1.7
	Gram– cocci	1.5	5.1	30.1	<0.8
	Unknown	<b>47.4*</b>	41.6	206.2	38.2
	Total bacteria (All groups)	<b>101.9*</b>	54.7	281.1	91.4
<b>Outdoors</b>	Gram+ rods	<b>38.4*</b>	55.9	353.6	19.3
	Gram+ cocci	<b>24.1**</b>	36.4	203.6	10.3
	Gram– rods	<b>13.0*</b>	32.0	183.5	2.6
	Gram– cocci	2.2	8.0	66.5	<2.5
	Unknown	<b>101.4*</b>	111.3	754.1	62.6
	Total bacteria (All groups)	<b>179.2*</b>	168.2	958.8	121.2

##### **Thermophilic bacteria**

<b>Indoors</b>	Gram+ rods	<b>2.0*</b>	3.4	23.9	0.8
	Unknown	<b>1.7*</b>	7.1	59.3	<0.8
	Total thermophilic bacteria (All groups)	<b>3.6*</b>	8.0	60.1	1.2
<b>Outdoors</b>	Gram+ rods	<b>7.8*</b>	16.9	94.6	2.5
	Unknown	<b>2.9*</b>	7.0	54.4	<2.5
	Total thermophilic bacteria (All groups)	<b>10.7*</b>	22.3	149.0	3.8

##### **Notes:**

- (1) All minimum concentrations were below detection.
- (2) Summer and winter data, and all Gram-positive rods, were combined.
- (3) \*  $p < 0.05$  (higher outdoor concentration using Kruskal-Wallis test)
- (4) \*\*  $p < 0.001$  (higher indoor concentration using Kruskal-Wallis test)

**Source:** Tsai, F.C.; Macher, J.M. 2005. Concentrations of airborne culturable bacteria in 100 large U.S. office buildings from the BASE study. Indoor Air 15(Suppl 9):71-81.